

Optimized Cellular Core For Rotorcraft, Phase I

Completed Technology Project (2007 - 2007)



Project Introduction

Patz Materials and Technologies proposes to develop a unique structural cellular core material to improve mechanical performance, reduce platform weight and lower the production costs for rotorcraft platforms. The performance of any rotorcraft will be inherently dependent on the flight weight of that structure. The goal of Patz Materials and Technologies is to combine their experience of resin/fiber reinforced composite materials with their core fabrication technology to create a new and novel cellular core material for the advancement of the rotorcraft industry. To achieve this goal Patz Materials and Technologies proposes to work directly with a rotorcraft producer, Bell Helicopter, to quantify the specific physical requirements of cellular core structures applied to rotorcraft platforms. The outcome of this partnership will allow Patz Materials and Technologies to develop a unique structural prepreg based cellular core to optimize performance versus weight. A small amount of the core will be fabricate and physically tested to validate its significance.

Anticipated Benefits

Potential NASA Commercial Applications: Structures such as military and commercial aircraft, ground vehicles and marine vessels have the potential to utilize a new cellular core material to increase strength while reducing weight. The new cellular core material could also be utilized in numerous sporting goods, optical benches and even cargo containers. Potential Non-NASA Commercial Applications: Rotorcraft industry: One of the primary goals of NASA is to improve the state of the art technologies available to the aerospace industry. This is the main focus of this proposal. Space Platforms: The cost per weight of material placed into space is astronomical. The creation of stronger lighter core materials could significantly reduce the weight of a structure, sub structure and even the launch vehicle enabling higher payload capacities less fuel consumed and less overall cost to produce the structure. Mars Unmanned Rotorcraft Vehicle: The reduction of weight on an unmanned rotorcraft vehicle for the purpose of exploring Mars is an immediate application in which saving even a few pounds of weight will yield immense savings in associate launch costs.



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

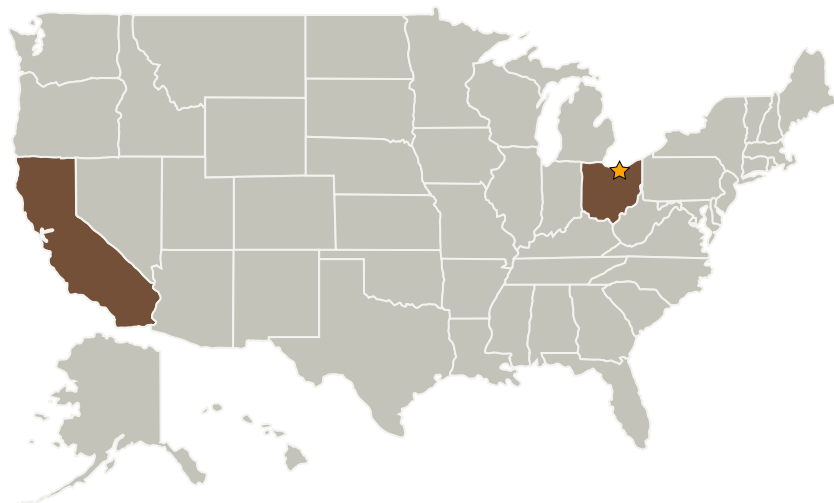
Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Patz Materials & Technologies	Supporting Organization	Industry	Benicia, California

Primary U.S. Work Locations

California	Ohio
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Project Transitions

▶ **January 2007:** Project Start

✓ **July 2007:** Closed out

Closeout Summary: Optimized Cellular Core For Rotorcraft, Phase I Project Image

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Project Manager:

Marisabel Kelly

Principal Investigators:

Nicholas Patz

Nick Patz

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
 - └ TX12.1 Materials
 - └ TX12.1.1 Lightweight Structural Materials